OBSERVATIONS AND REMARKS

RESPECTING

THE MORE EFFECTUAL MEANS OF PRESERVATION

OF

WOUNDED SEAMEN AND MARINES

ON BOARD OF

HIS MAJESTY'S SHIPS,

IN TIME OF ACTION.

By J. RYMER.

SECOND EDITION.

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1790

TO THE

Right Honourable LORD KEPPEL,

BARON ELDEN,

ADMIRAL of the BLUE,

AND

FIRST LORD COMMISSIONER
of the ADMIRALTY.

My Lord,

IT has been very early pretended, and progreſſively has acquired the concurrence of ſenſible men and perſons of honour, that the ſpirit and drift of Dedication and of Epiſtles dedicatory is, *Adulation*—ſo modified, ſo dreſſed and ſet off, that the candour of the panegyriſt is generally ſuſpected. It is very certain that upon weak and vain minds the artful ſycophant has often made profitable impreſſions: But, my Lord, in the preſent inſtance, nothing of that illiberal and pitiful nature can poſſibly occur. Your Lordſhip is greatly ſuperior to every ſpecies of crafty praiſe—hence not to be ſubdued by any manner of ignoble flattery:

And,

And, my Lord, your humble ſervant begs leave to aſſure your Lordſhip, that he is as equally incapable to avail himſelf by it:—wherefore, we eminently deviate from many of our predeceſſors in this way.

In preſuming very reſpectfully and deferencially to place this tract under your Lordſhip's patronage, my chief motive is the ſervice of my fellow ſubjects: for which reaſon, I am ſure it will be well received. And, as the Court of Surgeons of this metropolis, who treated me with abundant civility, have honoured it with their particular approbation, I humbly conceive the purport of it deſerves to be enforced.

The Tourniquet which I invented has a preference to the one now in uſe. In aſſerting this, I will free myſelf from imputations of vanity and ſelfiſhneſs, by declaring, that men of experience and ſincerity have ſaid ſo.

During my ſervice in America, my Lords Commiſſioners of the Admiralty directed, that the Board of Sick and Hurt ſhould examine

and

and report the merits of my Tourniquet. Upon which, ſeveral of them were made at my expence, and laid before the Commiſſioners of the Sick and Hurt. After much trouble and modified evaſion (as I have been lately informed by Mr. M'Culloch, an ingenious and able mathematical inſtrument maker of Queen's Square, Smithfield, who made the Tourniquets and attended to anſwer queſtions) a final conſultation was held—at which were preſent mechanics, theoriſts, and empirics. On this occaſion, ſome learned gentleman, being in a peculiar vein of humour, pluck't from his pocket a ſnot-handkerchief, applied it round his thigh, and with a boot-ſtrap hook, or ſomething analogous, began twiſting away, ſaying vociferouſly, "Look'e, Gen'men—there's for you—"there's a Tourniquet—as good as any one"—or articulations to ſome ſimilar effect. In conſequence of ſuch groſs and ill-timed buffoonery, the council ended. Whether there were any report made to the Admiralty Board, I cannot ſay; but, am credibly informed, that the introduction of my Tourniquets would neceſſarily affect the makers of ſuch as are now uſed in the Navy—which peradventure, may

may be ſupplied by contract:—Hence, being abſent, and having no friend, no patron, no advocate, I had little chance to ſucceed in my endeavours to ſerve the beſt and braveſt of mortals—Britiſh Seamen and Soldiers!—and, I will acknowledge it, myſelf alſo. Public good and individual intereſt are inſeperable; if the latter does not flouriſh, the former muſt decay: but, it is a ſtrange paradox, that *truth* in any age ſhould require an advocate.

While the fate of merit and the ſpirit of diſcovery ſhall be ſubmitted to the mercy of illiberal deciſion, checked and ridiculed by wanton ignorance and dotage, nay, perhaps, principles ſtill more indignant and reprehenſible, the Gods, my Lord, and Godeſſes of Arts and Sciences, may take themſelves off from a degenerated kingdom, and fly to ſome happy land where public virtue ſhall prevail.

Few things in liberal ſociety can be more unpleaſant to the generous mind, than to find fault with any one, even where there may be ſome ſlight occaſion for it. How peculiarly

aggravated

aggravated muſt ſuch a conduct be in the abſcence of the ſufferer, when no cauſe exiſted, no poſſible temptation to excite deriſion upon a ſubject ſo importantly ſerious! God knows, to a poor man, the mere anxiety of mind and ſufferings of the purſe, in many caſes of experiment and diſcovery, are evils ſufficiently diſtreſſing: and here, inſult added to misfortune is rather too weighty for fleſh and blood to ſuſtain. But, by way of ſoftening the matter, it happens too often when the beſt of men are raiſed to power, continually agitated in the ſphere of official buſineſs, that the lovelier qualities of our nature,—"Dear ſenſibility—eternal fountain of our feelings!" ſhall be totally extinguiſhed, and all the angelic and godlike paſſions of the mind univerſally abſorpt—for ever blaſted! Such agents operating upon the ſoul and heart of my antagoniſt, (whoever he was, for I know him not,) would very naturally be the cauſe of his imprudence and want of charity; however, as I well know the foibles and inſtability of human nature, I heartily forgive him.

Through

Through the natural and eſſential ſource of their very exiſtence, the Navy, that your Lordſhip may be the means of elevating theſe Kingdoms to their ancient and hereditary and glorious pride of honeſt greatneſs, proſperity and happineſs, is the zealous wiſh of

My Lord,

Your Lordſhip's moſt reſpectful,

And moſt humble Servant,

JAMES RYMER.

LONDON,
8th APRIL, 1782.

To

To Mr. RYMER.

SIR,

I HAVE the Directions of the Court of Examiners of the Surgeons Company, to inform you, that they have read, and duly conſidered your late Pamphlet, and are unanimouſly of Opinion with you, that a greater Number of Tourniquets than are at preſent uſed, are highly neceſſary for the Safety of his Majeſty's Subjects.

I am,

SIR,

Your moſt obedient Servant,

JOS. CRUTTENDEN.

Surgeons Theatre,
17th February, 1780.

TO THE

MASTER, WARDENS, AND COURT OF EXAMINERS OF THE

CORPORATION OF SURGEONS OF LONDON,

THE FOLLOWING

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SURGEON OF THE ROYAL NAVY.

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SURGEON OF THE ROYAL NAVY.

THE author of the inſtructions for navy ſurgeons has been very ſenſible of the principal buſineſs of theſe gentlemen during action. They are particularly directed, to beſtow all poſſible attention to the wounded men, in what relates, more eſpecially, to ſtop and prevent effuſions of blood; becauſe, upon this immediately depend the lives of many brave men.

In the hiſtory of engagements by ſea, we are preſented with melancholy liſts of the killed and wounded. Here our compaſſion is excited—commentation upon ſuch ſorrowful ſubjects ſeems to be precluded; and for the moſt part, ſilence enſues. We ſeldom go farther; we rarely enter into an inveſtigation, whether thoſe ſaid to have been ſlain, were abſolutely and inſtantly killed; whether they died by loſs of blood; and, whether, in that caſe, it might not have been poſſible, by an immediate prevention of hæmorrhage to have ſaved them.

I am aware of the very great delicacy attending enquiries of this nature, howſoever neceſſary they may be.

The

The public, in general, having read, with deep concern, the account of a ſea-fight relative to the killed and wounded, is willing to thank *God Almighty* that the caſe was not worſe. They naturally, and very charitably ſuppoſe that the ſurgeon's conduct is irreprehenſible—having exerted his utmoſt efforts in the performance of his duty; and, that, of courſe, he is ſupplied amply with every inſtrument neceſſary in his profeſſion, as well as *ſkilful* in ſuch methods as are beſt adapted to the *circumſtances* of battle. But, the ſame public, I apprehend, would be ſhocked, when told, that, in time of action, many a brave man periſhes, by loſs of blood, for want of proper and timely aſſiſtance.

Hence, and, in this place it may not be improper to take notice of a ſtigma caſt upon ſurgeons of the navy, by a late popular man, in an auguſt aſſembly. If my memory does not betray me, I think it was obſerved, that ſome ſurgeons in his Majeſty's navy, were not worthy to be entruſted with horſes or dogs. As I look upon the perſon who advanced this very learned and liberal aſſertion, to be in this inſtance, cruel and uncharitable, we will readily forgive the uninveſtigated reverie; and attribute the uncandid thought in the ampleſt manner, to a total defect of reflection upon cauſe and effect.

In ſubmitting my remarks on this important ſubject, with all deference, on my part, to ſuperior judgment and more enlarged underſtanding, I have no other view but

but the better preſervation of gallant men, who bleed for their country! And, as every innovation upon eſtabliſhed rules ſhould neceſſarily be conducted with prudence and ſerious circumſpection, I truſt, it will appear that the ſentiments contained in theſe pages, are not the chimerical production of a theoretical brain; but, by candid deliberation, have ariſen purely from motives of humanity as well as of evident neceſſity.

If it ſhall be judged neceſſary and expedient to draw any concluſion in favour of what I humbly point out; if it ſhall appear, that in time of war, ſurgeons ſhould be furniſhed, by government, with a greater number of tourniquets; and that Petit's tourniquet, or, the one I ſubmit to judgment, is beſt calculated to anſwer public utility, I ſhall be very happy. If on the reverſe, it may appear both unneceſſary and inexpedient, and that my tourniquet is not to be preferred to Mr. Petit's, I hope I ſhall not be judged to merit cenſure in having advanced ſuch obſervations and propoſitions, as appeared to me to have a direct tendency to the preſervation of our fellow creatures.

It is a lamentable truth, that on ſhip-board, in action, many men have bled to death, who might have been preſerved, by proper and timely aid: and, it is to be feared, that while the preſent ſyſtem of operating, and the ſurgeon's apparatus ſhall continue without

without alteration, in ſome particulars, and addition in others, ſuch ſhocking caſes will occur.

In the navy, upon ſight of a ſtrange ſail, it is common, in time of war, to beat to arms—all hands to quarters; the ſurgeon and his mates, of courſe, go to their ſtation in the cock-pit, to get every thing in readineſs. The inſtruments are, in general, confuſedly at hand in a box. Then there is a diſplay of bandages, compreſſes, bolſters, pledgits, ſplints, tow, rollers, flower, bol. armen. ol. terebinth. balſ. traumatic. and other ſimilar articles, which in my humble opinion, in a great meaſure, only ſerve to betray our weakneſs, and to caſt a ſorrowful veil over danger and death. How often have I heard of ſtumps and dangerous wounds having been plaiſtered over, and bound up, when principal branches of arteries were untied, and the poor ſouls conſequently periſhed by hæmorrhage!

Sponges; water in buckets; armed needles, crooked and ſtraight; lint; tow—as being always neceſſary, will, ſurely never be omitted.

Let me aſk, firſt, what capital caſes a ſurgeon has to expect in time of action: and, ſecondly, what inſtruments he will have the moſt occaſion for. The moſt dangerous and alarming caſes will be limbs ſhot off—or ſo injured by laceration and fracture, that they muſt ſoon be amputated. If an arm or leg is fairly ſhot off, there will be a hæmorrhage, a ragged ſtump and a ſhattered bone or bones; an amputation muſt therefore be

performed

performed to remove the injured parts. Here the inſtruments required are tourniquets *immediately*. The knife, the ſaw, the needle and ligature, may be *for a while* poſtponed. The circumſtances of other caſes, of leſs danger, will naturally guide the ſurgeon in his choice of inſtruments and applications: But he muſt by no means finally dreſs a wound, till the divided arteries are ſecured by needle and ligature—external applications are not to be truſted. I never deſire to ſee dangerous wounds or ſtumps bound up, till I am certain there is no danger from hæmorrhage: and then the bandage ſhould be applied ſo, as juſt to retain the dreſſing—no tight compreſſion. For, why create to one's ſelf anxious trouble, and additional pain to the diſtreſſed?

In all affairs of imminent danger and terrible conjuncture, the ſyſtematical rules of ſcience muſt very frequently ſubmit and give way, to inventions of neceſſity, and ſtratagems of ready judgment.

It would be very vague and inconſiſtent to ſuppoſe, amidſt the horrors of actual war, the noiſe, the inceſſant buſtle and diſtraction of engagement, that an amputation ſhould be as properly, and chirurgically, performed in a cock-pit, as in a room on ſhore.

I humbly conceive, that if the navy were furniſhed with the beſt ſurgeons and ableſt operators, it would be ill judged to think, with the preſent means, they could timely be able to extend relief to every wounded man, and diſcharge their duty profeſſionally. Time, place, and

and the circumſtances of battle, all combine againſt the immediate performance of capital operations, agreeably to the eſtabliſhed rules of the chirurgic art.

It is very ſimple and eaſy, over a glaſs, to enumerate the ſteps of an operation. Some, unacquainted with the nature of a ſhip and ſea actions, may ſuppoſe a great deal of buſineſs might be done with two tourniquets. Such might ſay—I would ſoon apply my tourniquet, my tape, or not tape—then I would make my firſt inciſion through ſkin and adipoſe membrane—then I would ſave all the ſkin I could, by retraction—then I would divide the muſcles by two circular ſweeps down to the bone—then I would draw up the muſcles—then I would ſaw the bone—then I would ſecure the arteries by needle and ligature—draw my ſkin down—apply lint, &c.

This is very innocent doctrine, and might have ſome application in ſea practice, provided the deſtiny of war would always keep an eye upon the ſurgeon, and not ſhoot off a ſecond man's leg or arm, till the firſt ſufferer ſhall have been ſo treated as to be out of immediate danger.

In an action by ſea, for inſtance, on board of a third rate, ten or fifteen amputations are required to be immediately performed; one of a leg; one of an arm, —the ſurgeon has but two of Petit's ſcrew tourniquets—he muſt uſe theſe tourniquets in performing ten or more operations: By the time he has finiſhed two patients, perhaps four or more of the others are dead.

He

He muſt ſecure the divided arteries of each ſtump, by needle and ligature. He goes on ſlowly, and, ſometimes, bunglingly. His mind is agitated, and his whole frame ſhakes, in a ſcene of diſtreſs, ſurpaſſing all deſcription.

But, in his favor, can it be ſuppoſed a man, even of great fortitude and dexterity, ſhall timely perform this buſineſs, under ſuch circumſtances, with propriety? Then, what is to be done to ſave theſe brave men? I judge, it would be inſulting human nature, as well as the principles of a generous and grateful nation, to allege, that any idea of extra-expence ſhould prevent the adoption of new and efficacious means. The anſwer appears to me to be ſimply this: Let every ſurgeon be ſupplied with a number of proper tourniquets, in proportion to the compliment of the ſhip. I humbly think, a frigate ſhould be allowed fifteen, if not twenty; and the ſurgeon might be charged with them, as he is with ſome other articles. Upon an average, we will ſuppoſe there are 200 ſhips to be ſupplied with tourniquets, according to this plan —that one ſhip with another ſhall have ten tourniquets —that each tourniquet, made in a maſterly and workman-like manner, ſhall coſt twenty ſhillings: So that here would be an expence to the kingdom of Great Britain of 2000l. to furniſh it's Navy with tourniquets. When we conſider, that, with care, theſe inſtruments ſhall be fit for uſe after a period of thirty years—that they are machines adapted to the nobleſt and moſt generous purpoſe humanity can poſſibly ſuggeſt, the preſervation of brave men, who devote their lives in ſupport of the honor and dignity of their country—ſo ſmall a ſum cannot be judged to be ill applied.

Here would be a new and goodly ſcene of relief—a certain proſpect to prevent all embarraſſment, as well as complaints and reflections upon the ſurgeon's conduct.

In general, the courage of a thinking and judicious man, expoſed to danger and difficulties, will be found to be in proportion to the abſolute and attainable means of preſervation and ſafety. In time of action, if a ſurgeon is conſcious he has it in his power to preſerve wounded men, by a ſimple, eaſy, and expeditious method, his mind will be ſteady and collected; and he will poſſeſs double fortitude.

In the preſent ſyſtem of diſtributing tourniquets, there is ſurely no proportion obſerved between the complement of a ſloop and a firſt rate. If the firſt muſt have two, the latter ſhould conſequently have ſixteen; and as the price of theſe, agreeably to the prevailing rules of ſervice, would be deducted from the ſurgeon's emoluments, it would be more than his income could afford. By compariſon, it would be highly abſurd, if Captains of men of war were enjoined to furniſh any article eſſential to his Majeſty's ſervice, from their own purſe.

In time of action, if a man is brought down to the ſurgeon, having a limb ſhot off, the ſurgeon's conduct might be ſimply this: let him, or his mate, apply a tourniquet; and having made a neceſſary compreſſion, and ſtudying to ſave as much ſkin as he can,

he

he may remove the lacerated and ſhattered parts by an amputation. Having ſecured the principal arteries, let him apply dry lint, &c. to the ſtump; and keeping the tourniquet fixed, if neceſſary, and ſomewhat ſlackened, ſo as not to endanger hæmorrhage, let the patient be thus removed to the plat-form, to remain till time admits of further attention. In this manner, the ſurgeon or his mates might proceed with others in ſimilar ſituations.

If circumſtances will not allow him to attempt to operate, he may in general preſerve the life of his patient, by the application of a tourniquet.

I will give one inſtance, out of many, to indicate the neceſſity and propriety of adopting ſuch means as I have the honor to recommend.

In a late action, which happened in America, (upon that coaſt) on board of one of his Majeſty's ſhips, an officer, a friend, and formerly a meſs-mate, for whoſe melancholy fate I mourn, had both his lower extremities ſhot off about the knees; and, he died preſently after, in conſequence of the hæmorrhage. I apprehend, if there had been ſpare tourniquets at hand, the life of this brave man might have been ſaved. Any perſon of common ſenſe might have applied the machine. It is here to be underſtood, the ſurgeon was buſy below, and had both his tourniquets in uſe.

Another

Another great reaſon for adopting ſuch a method of proceeding, during action, is, that in caſe a ſurgeon, from whatſoever cauſe, * ſhall be unable to perform his duty, ſuch caſes as require an immediate application of the tourniquet, may be aſſiſted by any perſon of common ſteadineſs; and, thus, men dangerouſly wounded, may be preſerved, till proper help can be had.

The embarraſſments ariſing from the motion of the ſhip, in caſe of action when it blows freſh, or when there is a great ſwell with little wind; alſo the inconvenience of candle light, too frequently rendered dim and obſcure, by ſmoke, and the very confined place the ſurgeon is ſtationed in, claim particular attention. It will hence appear, a ſurgeon cannot at this time operate as he might wiſh.

Beſides, it may be the caſe, ſome young ſurgeons, of little experience in capital operations, of great delicacy and ſenſibility of conſtitution, ſhall be ſo affected, ſo embarraſſed, and in ſuch tremor during action, as not to be capable to make uſe of the needle and ligature; which, in time of action is tedious and laborious; and requires, moreover, a ſteady hand, as well as a clear and methodical head. In ſuch a dilemma, even a wounded man himſelf might ſave his own life, by the application of the tourniquet: at leaſt, it will ſeldom happen, but ſome by-ſtander will be ready to do it for him.

I look

* The ſurgeon of a third rate in Admiral Keppel's affair loſt an arm.

I look upon proper tourniquets to be ſo eſſentially neceſſary in time of action, both by ſea and land, that I think every officer in particular, and every ſixtieth man ſhould be poſſeſſed of one, over and above the number the ſurgeon may be allowed.

When a man has a limb ſhot off; or, receives a wound in any extremity, followed by an effuſion of blood, inſtinct, or the common principle of ſelf-preſervation, predominating in a rational being, not only for it's individual ſelf and fellow creatures, but the whole animal creation, will induce any by-ſtander immediately to apply a compreſſion above the ſtump or wound. He will graſp it with his hands; he will ſurround it with a garter, a handkerchief, a cord, or other analogous ſubſtance in the way. But, as this ſimple force is inſufficient, inconvenient and unſecure, mechanical power muſt be had recourſe to; and, if this power, when applied, in time of action, ſhall anſwer, without any aſſiſtant being required, and without any manner of danger, from the ligature ſlackening by any chance touch applied to the lever, during the time the patient, on whoſe leg or arm it may be applied, ſhall remain on the plat-form, among other ſufferers, it muſt be the more eligible.

The beſt tourniquet hitherto in uſe, is that of Mr. Petit. It is an excellent inſtrument. The grand objection to this machine, *in time of action*, is, (waving all futile conſiderations of impeded motion, twiſting of it's parts, and previous ſkill in it's application)

tion*) that when ſcrewed up to the degree required, the ſmalleſt accidental force applied to the extremity of the lever, will unſcrew it, and of courſe, ſlacken the ligature: wherefore a centinel is always required; otherwiſe the patient, who is ſuppoſed to be removed apart, may bleed to death. As this objection appears to me to be well founded, and deſerving of particular conſideration, if each perſon, who has a tourniquet applied, ſhall require a watchman, ſuch tourniquets, had they all the merit of philoſophical mechaniſm beſides, are of little uſe *in time of action*; becauſe, at this conjuncture, men cannot be ſpared for ſuch purpoſes. It is alſo ſaid, it will unſcrew of itſelf. I have known this to be the caſe: but here I apprehend, ſufficient attention had not been beſtowed upon it's formation by the workman. As to the contrivance of the conglomerated bandage and ſtick, it is liable to a variety of objections.

However, to obviate all objections and complaints of this nature, we have only to recur to a tourniquet, whoſe power is ſufficient in all caſes; it's motion equable, quick, and to be regulated and remain fixed and immoveable at any degree. This we cannot obtain without a combination of the mechanical powers: and we cannot combine theſe powers in any machine, without an apparent inconvenience from weight and bulk; which, in practice, will be found, I humbly conceive,

* Some confuſed heads have applied it with the buckle drawn up to the machine, and have conceived the buckle cuſhion was meant for the baſe of the tourniquet to reſt upon.

conceive, to be of no manner of conſequence when contraſted with the real utility of the machine.

I have the honor to preſent a tourniquet upon a new plan: and, if it ſhall appear to be adapted to anſwer any good purpoſe to mankind, that conſideration alone will be a ſufficient reward.

It cannot be underſtood, that by here painting the ſcene of action in ſuch black and diſmal colours, I mean to deter and diſhearten the young ſurgeon. I have been only reaſoning upon what has happened, and what may be expected to happen again, with a view we may acquire the means to be always prepared for the worſt: and, as the lives of ſo many brave and uſeful men, are entruſted to the care of one perſon, it is reaſonable to think he ſhould be amply furniſhed with every auxiliary, tending to the welfare of the whole.

☞ Gentlemen deſirous of having the TOURNIQUET, conſtructed by Mr. *Rymer*, may ſee the ſame at Mr. *Scott*'s, Printer, *Chancery Lane*, and, by leaving their addreſs, will receive them ſo ſoon as there are fifty ſubſcribed for, at one guinea each.